1. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{9x^3 - 36x^2 + 17x + 30}{12x^2 - 11x - 15}$$

A. Vertical Asymptotes of $x = -0.75$ and $x = 1.667$ with no holes.

B. Vertical Asymptotes of $x = -0.75$ and $x = -0.667$ with a hole at $x = 1.667$

C. Holes at $x = -0.75$ and $x = 1.667$ with no vertical asymptotes.

D. Vertical Asymptote of $x = -0.75$ and hole at $x = 1.667$

E. Vertical Asymptote of $x = 0.75$ and hole at $x = 1.667$

2. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{12x^3 + 41x^2 - 38x - 40}{9x^2 + 18x + 8}$$

A. Vertical Asymptotes of $x = -1.333$ and $x = -0.667$ with no holes.

B. Vertical Asymptote of $x = -1.333$ and hole at $x = -0.667$

C. Holes at $x = -1.333$ and $x = -0.667$ with no vertical asymptotes.

D. Vertical Asymptote of $x = 1.333$ and hole at $x = -0.667$

E. Vertical Asymptotes of $x = -1.333$ and $x = 1.25$ with a hole at $x = -0.667$

3. Which of the following functions *could* be the graph below?

Hole at 3
x=5
x=-7
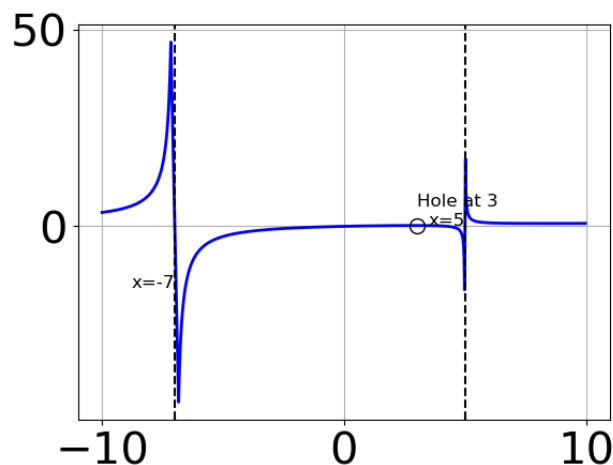
A. $f(x) = \dfrac{x^3 - 21.0x + 20.0}{x^3 - 1.0x^2 - 41.0x + 105.0}$

B. $f(x) = \dfrac{x^3 + 12.0x^2 + 39.0x + 28.0}{x^3 + x^2 - 41.0x - 105.0}$

C. $f(x) = \dfrac{x^3 - 8.0x^2 + 19.0x - 12.0}{x^3 - 1.0x^2 - 41.0x + 105.0}$

D. $f(x) = \dfrac{x^3 + 8.0x^2 + 19.0x + 12.0}{x^3 + x^2 - 41.0x - 105.0}$

E. None of the above are possible equations for the graph.

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4. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{4x^3 - 16x^2 - 9x + 36}{2x^2 - 3x - 9}$$

A. Horizontal Asymptote of $y = 2.0$

B. Horizontal Asymptote at $y = 3.0$

C. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x - 5$

D. Oblique Asymptote of $y = 2x - 5$.

E. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 2x - 5$

5. Determine the horizontal and/or oblique asymptotes in the rational function below.
$$f(x) = \frac{4x^3 - 19x + 15}{2x^2 + x - 10}$$

   A. Horizontal Asymptote of $y = 2.0$

   B. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x - 1$

   C. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x - 1$

   D. Oblique Asymptote of $y = 2x - 1$.

   E. Horizontal Asymptote at $y = 2.0$

6. Determine the horizontal and/or oblique asymptotes in the rational function below.
$$f(x) = \frac{5x^2 + 22x + 8}{25x^3 - 50x^2 - 4x + 8}$$

   A. Oblique Asymptote of $y = 5x - 32$.

   B. Horizontal Asymptote of $y = 0.200$

   C. Horizontal Asymptote of $y = 0.200$ and Oblique Asymptote of $y = 5x - 32$

   D. Horizontal Asymptote at $y = -4.000$

   E. Horizontal Asymptote of $y = 0$

7. Determine the vertical asymptotes and holes in the rational function below.
$$f(x) = \frac{6x^3 - 1x^2 - 47x + 30}{6x^2 + 5x - 6}$$

   A. Vertical Asymptotes of $x = -1.5$ and $x = 2.5$ with a hole at $x = 0.667$

   B. Vertical Asymptote of $x = 1.0$ and hole at $x = 0.667$

C. Vertical Asymptotes of $x = -1.5$ and $x = 0.667$ with no holes.

D. Vertical Asymptote of $x = -1.5$ and hole at $x = 0.667$

E. Holes at $x = -1.5$ and $x = 0.667$ with no vertical asymptotes.

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8. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{5x^2 - 27x + 10}{15x^3 - 31x^2 - 50x + 24}$$

A. Oblique Asymptote of $y = 3x + 10$.

B. Horizontal Asymptote of $y = 0.333$ and Oblique Asymptote of $y = 3x + 10$

C. Horizontal Asymptote of $y = 0.333$

D. Horizontal Asymptote of $y = 0$

E. Horizontal Asymptote at $y = 5.000$

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9. Which of the following functions *could* be the graph below?
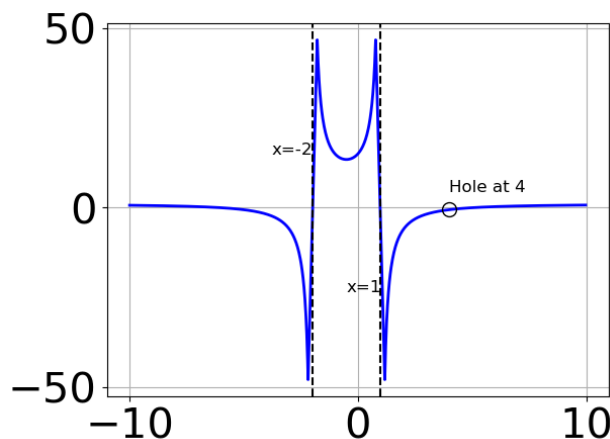
A. $f(x) = \dfrac{x^3 - 3.0x^2 - 34.0x + 120.0}{x^3 - 3.0x^2 - 6.0x + 8.0}$

B. $f(x) = \dfrac{x^3 + 3.0x^2 - 34.0x - 120.0}{x^3 + 3.0x^2 - 6.0x - 8.0}$

C. $f(x) = \dfrac{x^3 + 2.0x^2 - 33.0x - 90.0}{x^3 + 3.0x^2 - 6.0x - 8.0}$

D. $f(x) = \dfrac{x^3 - 5.0x^2 - 36.0x + 180.0}{x^3 - 3.0x^2 - 6.0x + 8.0}$

E. None of the above are possible equations for the graph.

10. Determine the vertical asymptotes and holes in the rational function below.
$$f(x) = \frac{6x^3 - 23x^2 + 9x + 18}{6x^2 + 19x + 10}$$

A. Vertical Asymptotes of $x = -2.5$ and $x = 1.5$ with a hole at $x = -0.667$

B. Holes at $x = -2.5$ and $x = -0.667$ with no vertical asymptotes.

C. Vertical Asymptotes of $x = -2.5$ and $x = -0.667$ with no holes.

D. Vertical Asymptote of $x = 1.0$ and hole at $x = -0.667$

E. Vertical Asymptote of $x = -2.5$ and hole at $x = -0.667$